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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,812	01/23/2004	C.P. Kelkar	4959	5008
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SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
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Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/763,812

Applicant(s)

KELKAR ET AL.

Examiner

Prem C. Singh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 1-16 and 30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/28/2004; 05/18/2005</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-16, drawn to a composition for NO_x removal, classified in class 423, subclass 239.1.
 - II. Claims 17-30, drawn to a process of reducing NO_x, classified in class 208, subclass 113.

The inventions are distinct, each from the other because of the following reasons:

Inventions in Group I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product. See MPEP § 806.05(h). In the instant case NO_x can be reduced by using a materially different composition, for example, ammonia as a reductant.

Because these inventions are independent or distinct for the reasons given above and because the inventions have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Attorney Raymond Keller on 01/02/07 a provisional election was made without traverse to prosecute the invention of claims 17-30.

Affirmation of this election must be made by applicant in replying to this Office action. Claims 1-16 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Specification

2. The abstract of the disclosure is objected to because claims elected for prosecution are on the method of reducing NO_x and the abstract in the present form is directed to the composition for NO_x removal.

Correction is required. See MPEP § 608.01(b).

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Claim Objections

3. Claim 30 is objected to because of the following informalities:

Claim 30 should read, "The method of claim 23 wherein.....".

Appropriate correction is required.

The examiner has treated claim 30 in Group II (method).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

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were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 17-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peters et al (US Patent 6,379,536) in view of Aubert et al (US Patent 6,214,306).

8. With respect to claim 17, Peters discloses a process for NO_x control in an FCC process by using a composition that comprises (i) an acidic oxide support, (ii) an alkali/alkaline earth metal, (iii) a transition metal oxide having oxygen storage capability, and (iv) a transition metal selected from Group I B and/or II B. (See column 1, lines 53-62). Peters further discloses a method of reducing NO_x emission during fluid cracking of a hydrocarbon feedstock into lower molecular weight components, said method comprising contacting a hydrocarbon feedstock with a cracking catalyst at elevated temperature whereby lower molecular weight hydrocarbon components are formed, said cracking catalyst comprising a NO_x reduction component of the invention (See claim 12, column 6, lines 22-40).

Peters does not disclose (i) mixed cerium and zirconium oxide in the NO_x reduction composition.

Aubert invention discloses a composition based on zirconium and cerium oxides and its use in NO_x reduction. Aubert further discloses that the composition comprises of (i) zirconium oxide and cerium oxide and it is provided in the form of pure solid solution of cerium oxide in zirconium oxide. (See column 1, lines 30-35). The invention further adds that the composition additionally contains (ii) a doping element chosen alone or a mixture from rare earth metals, alkaline earth metals, particularly lanthanum (See column 2, lines 47-57).

Aubert also discloses that the composition of the invention can be used in the catalysis of various reactions such as hydrodenitrification, cracking, hydrocracking etc. (See column 7, lines 50-60).

Since Peters and Aubert both inventions are disclosing a similar NO_x reduction composition in a catalytic cracking process, it would have been obvious to one skilled in the art at the time the invention was made to modify Peters invention and add (i) a mixed zirconium oxide and cerium oxide as suggested by Aubert into the composition of Peters for an enhanced NO_x reduction capability. See *In Re Kerkhoven*, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980).

9. With respect to claims 18 and 19, Peters invention discloses, "The invention encompasses FCC processes using the NO_x reduction compositions of the invention either as an integral part of the FCC catalyst particles themselves or as separate admixture particles in the FCC catalyst inventory." (Column 1, lines 63-67).

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10. With respect to claim 20, Peters invention discloses, "The said cracking catalyst is fluidized during contacting said hydrocarbon feedstock." (Claim 13, column 6, lines 41-42).

11. With respect to claim 21, Peters invention discloses, "The method of claim 12 further comprising recovering used cracking catalyst from said contacting step and treating said used catalyst under conditions to regenerate said catalyst." (Claim 14, column 6, lines 43-46).

12. With respect to claim 22, Peters invention discloses, "The method of claim 12, wherein said hydrocarbon feedstock contains at least 0.1 wt% nitrogen." (Claim 15, column 6, lines 47-48).

13. With respect to claims 23 and 30, Peters invention does not disclose cerium and zirconium oxide contents.

Aubert discloses, " Expressed in the form of oxides, the compositions according to the invention generally exhibit a Zr/Ce atomic ratio equal to or greater than 1." (Column 3, lines 10-15). "According to other embodiment of the invention, the cerium proportion can be at most 20%." (Column 3, lines 26-28). Thus, as discussed under claim 17, it would have been obvious to one skilled in the art at the time the invention was made to modify Peters invention and use a Zr/Ce ratio as claimed, for a better NO_x reduction composition.

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14. With respect to claim 24, Peters invention discloses, "The amount of transition metal present is 0.1-5 parts by wt per 100 parts of the oxide support material." (Column 3, lines 1-5).

15. With respect to claim 25, Peters invention discloses, "Preferably, the transition metal is selected from the group consisting of Cu, Ag and mixtures thereof." (Column 2, lines 66-67).

16. With respect to claims 26 and 27, Peters invention discloses, "The transition metal oxide having oxygen storage capability may be any transition metal oxide having oxygen storage capability similar to that of ceria." (Column 2, lines 47-49).

Since Peters suggests using any transition metal oxide similar to ceria and Aubert discloses using lanthanum as a doping element in the NO_x reduction composition as discussed under claim 17, it would have been obvious to one skilled in the art at the time the invention was made to modify Peters invention and use lanthanum oxide in place of ceria for similar performance in the NO_x reduction. Aubert further discloses, "Mention may more particularly be made of yttrium, lanthanum, neodymium, praseodymium, europium, and samarium." (Column 2, lines 55-57). See *In Re Ruff*, 256 F.2d 590, 118 USPQ 340 (CCPA 1958).

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17. With respect to claims 28 and 29, Peters invention discloses, "The amount of NOx reduction component in the additive particles is preferably at least 50 wt%."

(Column 3, lines 21-23).

Double Patenting

18. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

19. Claims 17-30 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-9 of U.S. Patent No. 6,852,298.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the '298 claims have an acidic oxide support and only cerium oxide as one component. The present application does not claim an acidic support and claims

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a mixed oxide of cerium and zirconium. Since the support material does not play an active role in the NO_x reduction process during FCC operation, and since zirconium is a known element for catalytic NO_x reduction, it would have been obvious to one skilled in the art at the time the invention was made to modify the '298 claims to eliminate the acidic oxide support and include zirconium with cerium for an enhanced NO_x reduction.

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kelkar et al, US patent 7,045,485.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prem C. Singh whose telephone number is 571-272-6381. The examiner can normally be reached on MF 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PS/010507



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